

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 2, 4, 5, 8-14, 16, 17, and 20-33 are pending. Claims 35 and 36 are canceled without prejudice or disclaimer, and Claims 3, 6, 7, 15, 18, 19, and 34 were canceled in a previous amendment. Claims 1, 10, 13, 14, 22, 23, 24, 27, 29, and 31 are amended. Support for the amendments to Claims 1, 10, 13, 14, 22, 23, 24, 27, 29, and 31 can be found at page 7, lines 5-11 of the specification, for example. No new matter is added.

In the outstanding Office Action, Claims 1, 2, 4, 5, 8-14, 16, 17, 20-24, 26-33, 35, and 36 were rejected under 35 U.S.C. § 103(a) as obvious over Amemiya et al. (U.S. Patent Pub. No. 2002/0106212, herein "Amemiya") in view of Applicant's disclosure at page 10, lines 21-24 of the specification, and Akiyama (U.S. Patent No. 4,956,677, herein "Akiyama"). Claim 25 was rejected under 35 U.S.C. § 103(a) as obvious over Amemiya, Akiyama, Applicant's disclosure at page 10, and Hiroshima et al. (European Patent No. 0 738 938, herein "Hiroshima").

Regarding the rejection of Claim 1 as obvious over Amemiya, Applicant's disclosure, and Akiyama, that rejection is respectfully traversed by the present response.

Amended Claim 1 recites:

A cleaning apparatus, comprising:

a brush member configured to contact and to remove negatively charged toner particles from a charging roller that is electrically charged,

wherein the brush member comprises a conductive material and a fiber material that is positively chargeable when rubbed with the toner particles,

wherein the brush member is configured to be driven to rotate by rotation of the member, and

wherein the brush member has a resistance value between $1 \times 10^3 \Omega$ and $1 \times 10^8 \Omega$.

Accordingly, a brush member is configured to contact and remove negatively charged toner from a charging roller that is electrically charged. The brush member comprises a conductive material. The brush member also comprises a fiber material that is positively chargeable when rubbed with toner particles.

One benefit of the above-described arrangement is that the charging roller is prevented from electrical leakage of the charged voltage so that the charge applied by the charging roller does not become insufficient to charge the photoreceptor.

In contrast, Amemiya does not disclose a brush member configured to contact a charging roller and which comprises a conductive material. Instead, Amemiya describes filaments of a brush (20) that are formed of nylon or polyethylene. Amemiya states:

The filaments of the brush 20 may be formed of any suitable material. Experiments showed that nylon 66, PET (polyethylene terephthalate) or similar resin effectively reduced the yield of the brush 20 and insured the adequate amount of bite. If desired, the filaments may be formed of a material capable of electrostatically collecting toner from the charge roller 2 so as to further promote efficient cleaning.¹

Amemiya takes no measures to ensure that the nylon or polyethylene has any particular value of conductivity. As discussed in Applicant's specification at page 11, lines 10-15, without special modification, nylon is non-conductive. Accordingly, Applicant respectfully submits that Amemiya describes only non-conductive filaments and does not suggest using conductive filaments in contact with a charging roller.

Akiyama describes a cleaning brush (13) with filaments (13a) containing carbon impregnated nylon fiber. However, the cleaning brush (13) contacts the photosensitive member (1). Further, the cleaning brush contacts the photosensitive member (1) only after the photosensitive member (1) has been discharged by the charge removing device (7).

¹ Amemiya, numbered paragraph [0036].

Akiyama states:

The image forming apparatus further includes a charger 2 for charging the surface of the photosensitive member 1, an optical writing device 3 for irradiating light upon the photosensitive member 1 in accordance with image information, a developing device 4 for causing toner powder to be adhered to the photosensitive member 1, a transfer device 5 for transferring toner powder from the photosensitive member 1 to a lower face of a record sheet 11 of paper, and a charger 12 for charging toner powder remaining on the photosensitive drum 1 after transfer. The charger 12 will be hereinafter referred to as a pre-charger. **A charge removing device 7 for removing a charge from the photosensitive member 1 is disposed behind the pre-charger 12. The image forming apparatus further includes a cleaning device 8 which in turn includes a cleaning brush 13 formed from filaments 13a wherein carbon is contained by a predetermined amount in high-molecular fiber of nylon, acrylic resin, rayon, polycarbonate resin, polyester or polyvinyl, a collector roll 14 for collecting toner powder from the cleaning brush 13, and a scraper 16 for mechanically scraping toner powder off the collector roll 14. The image forming apparatus further includes a fixing device 6 consisting of a pair of rollers for permanently fixing toner powder on record paper.**²

As shown in Fig. 1, the cleaning brush (13) is always after the charge removing device (7) in the direction of rotation (A). Thus, the cleaning brush is exposed only to an uncharged photosensitive member (1). Accordingly, Akiyama is unconcerned with maintaining a charge on a roller. Rather, Akiyama deals with an uncharged photosensitive member (1) while Amemiya deals with a charge roller. Accordingly, Applicant respectfully submits that a person of ordinary skill in the art would not be motivated to combine the carbon impregnated nylon filaments of Akiyama with the non-conductive nylon filaments of Amemiya. Applicant further respectfully submits that, in light of the discussion above, no reasonable combination of Amemiya and Akiyama would include all of the features of amended Claim 1, and Applicant respectfully requests that the rejection be withdrawn.

² Akiyama, col. 6, lines 28-53 (emphasis added).

Amended independent Claims 13, 27, and 31 recite substantially similar features to those discussed above regarding amended independent Claim 1. Accordingly, Applicant respectfully submits that amended independent Claims 13, 27, and 31 patentably distinguish over any reasonable combination of the cited references for at least the same reasons as amended Claim 1.

Claims 2, 4, 5, 8-12, 14, 16, 17, 20-26, 28-30, and 32-33 each depend from one of independent Claims 1, 13, 27, and 31. Accordingly, Applicant respectfully submits that Claims 2, 4, 5, 8-12, 14, 16, 17, 20-26, 28-30, and 32-33 patentably distinguish over any reasonable combination of the cited references for at least the same reasons as the claims from which they depend.

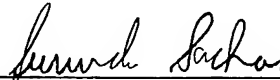
Regarding the rejection of Claim 25 as obvious over Amemiya, Applicant's disclosure at page 10, Akiyama and Hiroshima, that rejection is respectfully traversed.

As is the case with Akiyama, Hiroshima describes a brush configured to clean in image transfer member. Accordingly, Applicant respectfully submits that any reasonable combination of Amemiya and Hiroshima would suffer from the same deficiencies discussed above regarding Akiyama and Amemiya.

Consequently, in view of the above discussion and present amendments, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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